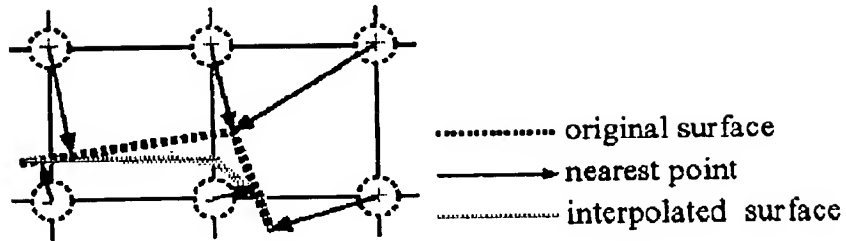


FIG.1



SURFACE RECONSTRUCTED BY
CODE DISTANCE FIELD AND LINEAR INTERPOLATION

FIG.2A

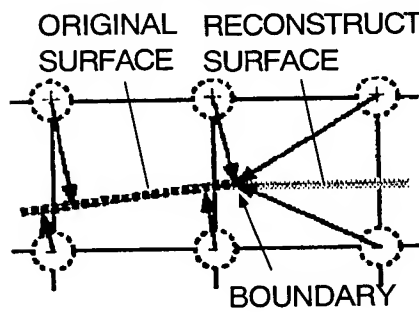
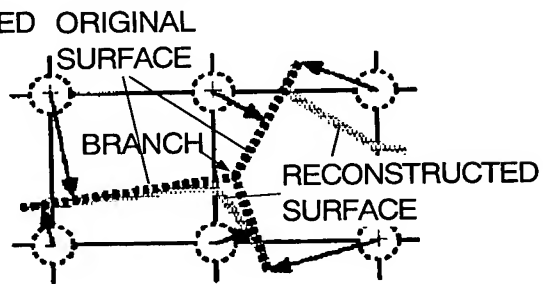


FIG.2B



NONMANIFOLD SHAPE RENDERED IN IMPLICIT FUNCTION
BY CONVENTIONAL METHOD

FIG.3A

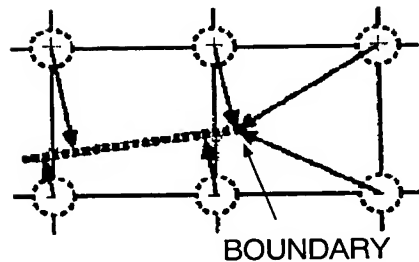
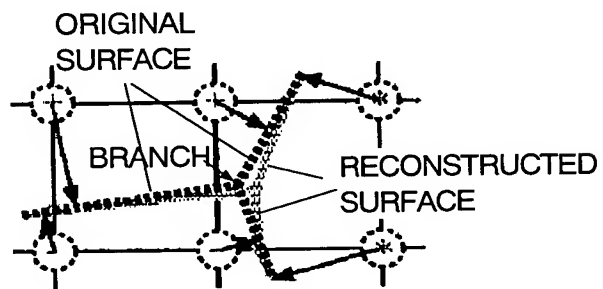


FIG.3B



NONMANIFOLD SHAPE RENDERED
IN IMPLICIT FUNCTION BY PRESENTED METHOD

FIG.4A

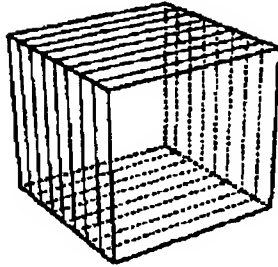


FIG.4B

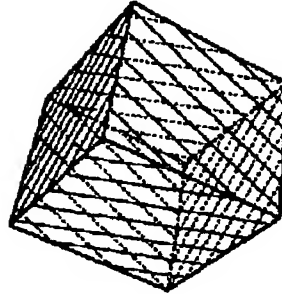


FIG.5A

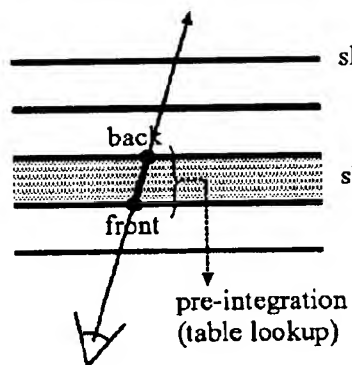
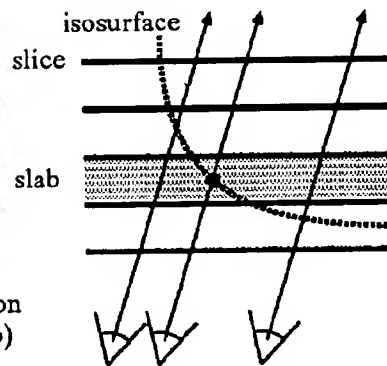


FIG.5B



DRAWING USING TEXTURES ON TWO ADJACENT SLICES

FIG.6A

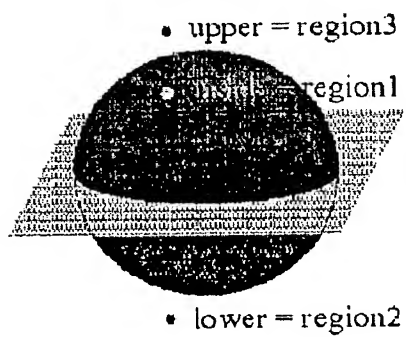


FIG.6B

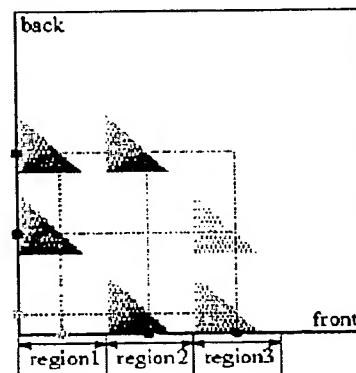


FIG.7A

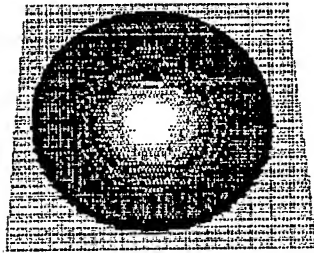


FIG.7B

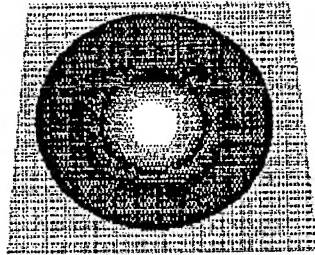


FIG.8A

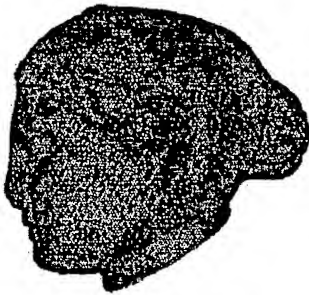


FIG.8B



FIG.8C

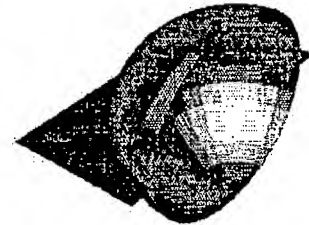
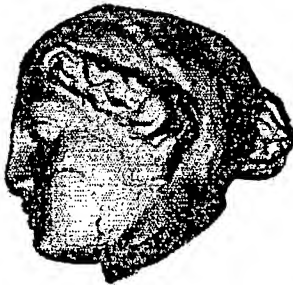
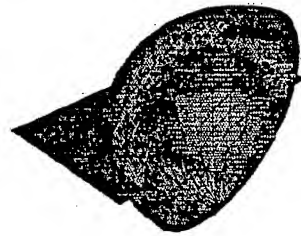


FIG.9

- CODE DISTANCE

$$f(p) = \pm d$$

- d : Euclidean DISTANCE
- f : FUNCTION VALUE
ON SURFACE
- $f > 0$: SURFACE ● +
- $f < 0$: BACKSIDE ● -

- LINEAR INTERPOLATION

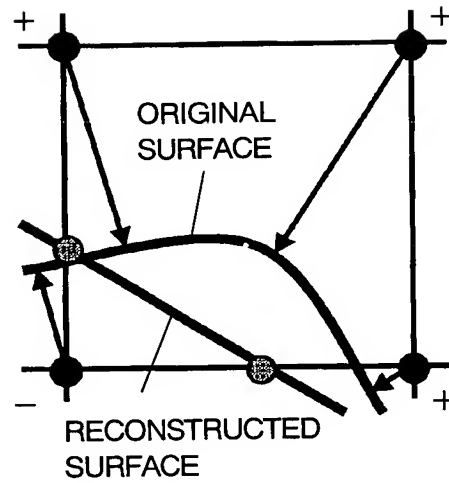
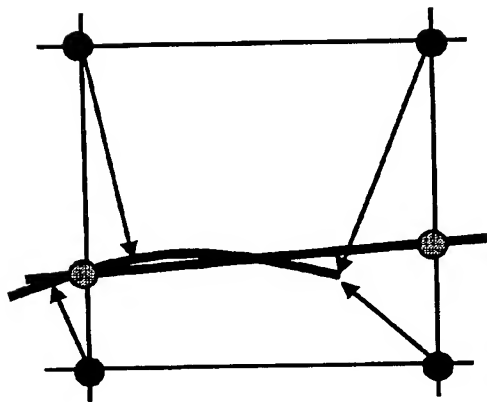
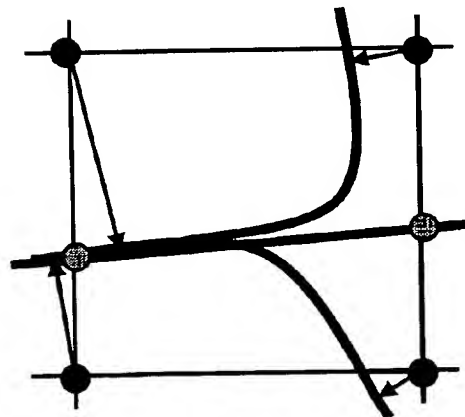


FIG.10A



BOUNDARY ON SURFACE

FIG.10B



BRANCH ON SURFACE

FIG.11

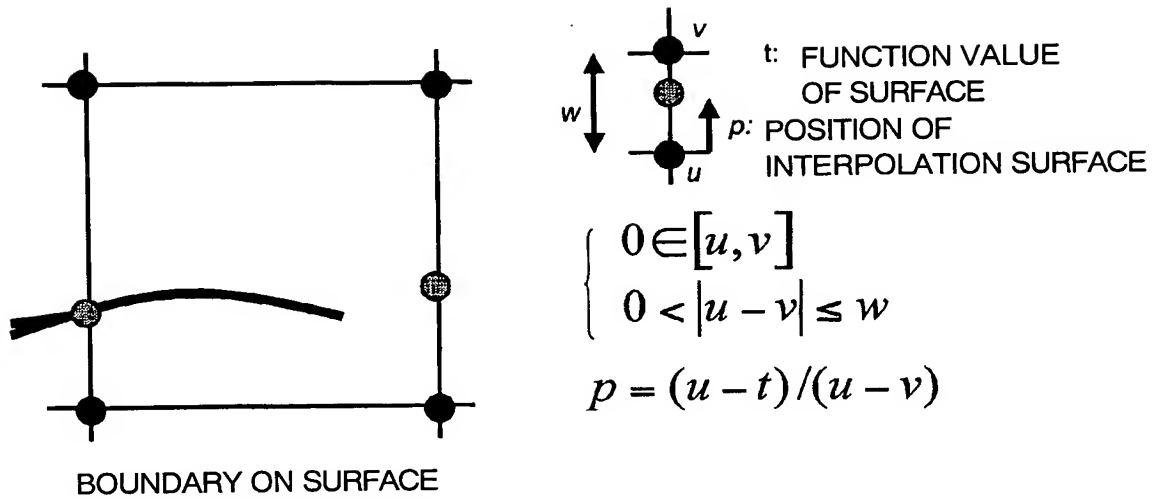


FIG.12

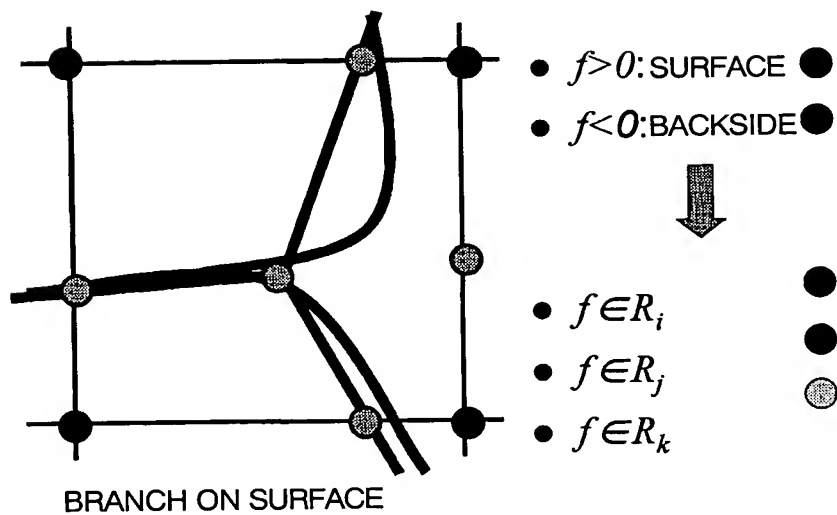


FIG.13

- CODE DISTANCE : $f(p) = \pm d$



- REGION DISTANCE : $f(p) = \min(d, 2^B) + 2^B i$

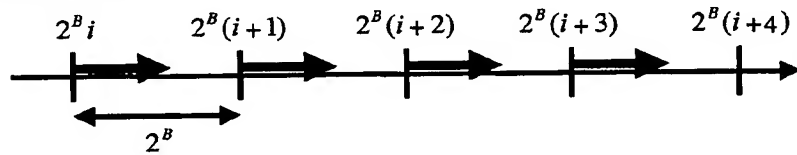


FIG.14

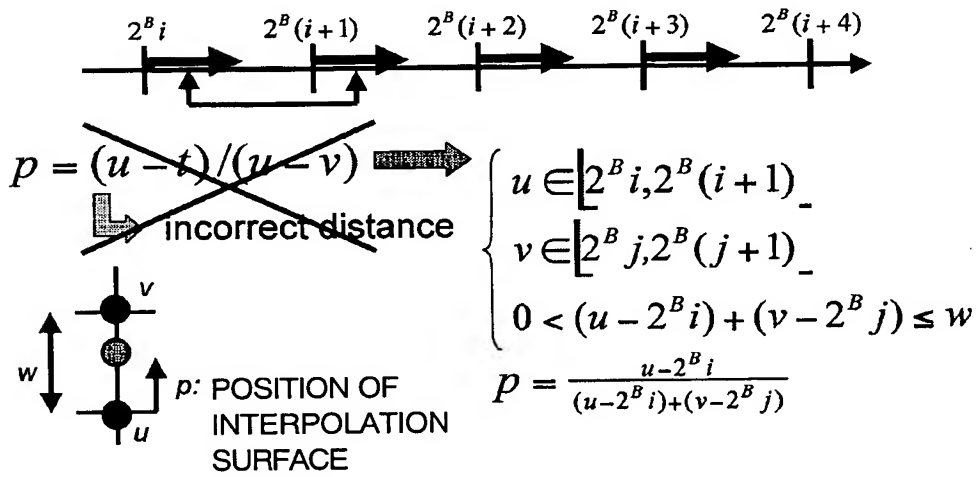
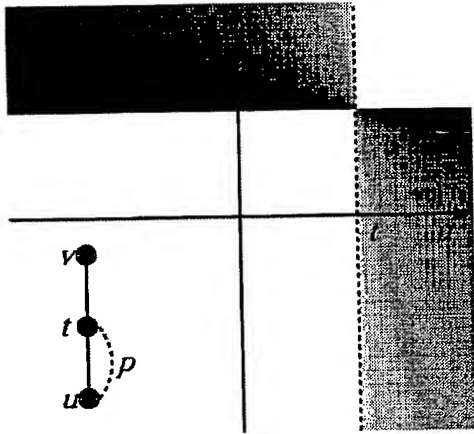
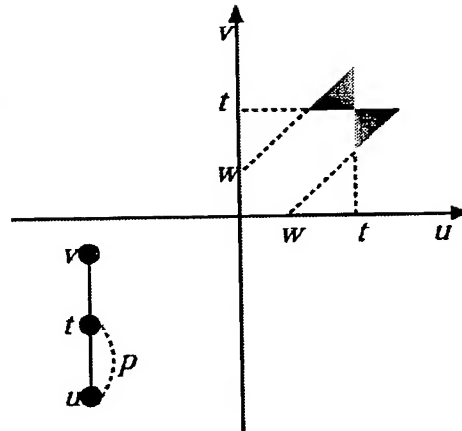


FIG.15A



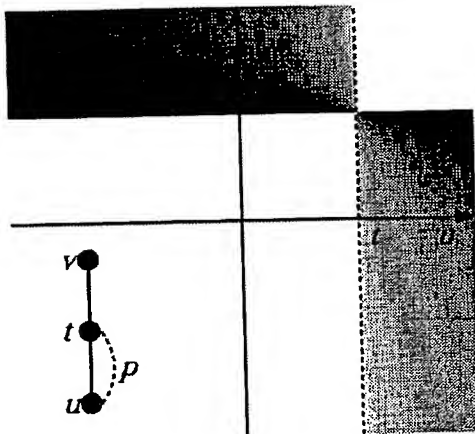
LINEAR INTERPOLATION

FIG.15B



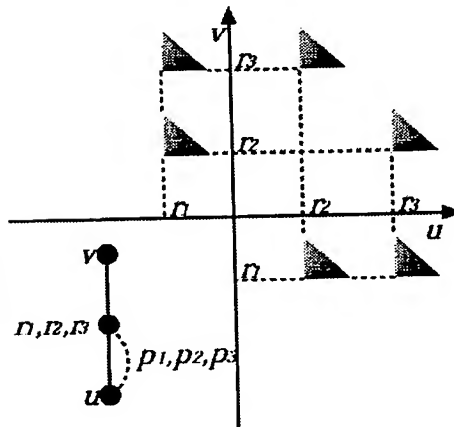
SURFACE WHERE THERE IS BOUNDARY

FIG.16A



LINEAR INTERPOLATION

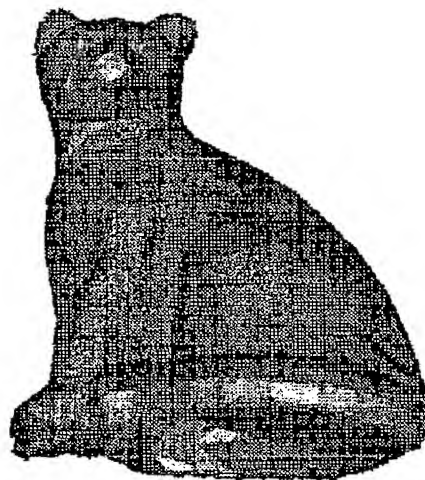
FIG.16B



SURFACE WHERE THERE ARE BRANCH AND BOUNDARY

implicit surface rendering

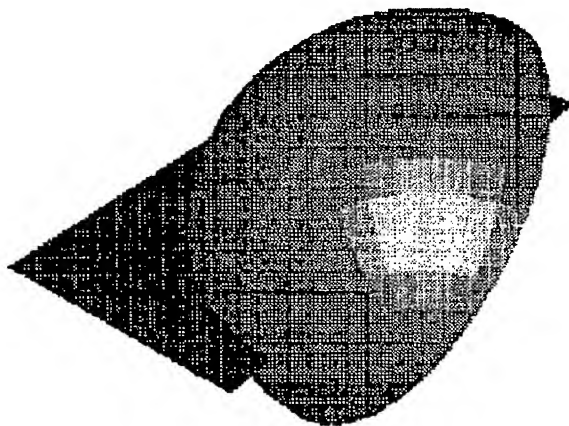
FIG.17A



(volume= 128^3)

implicit surface rendering

FIG.17B



(volume= 256^3)

BEST AVAILABLE COPY